

WHAT IS CLAIMED IS:

1. An antenna apparatus comprising:

a first circularly polarized antenna that efficiently sends and/or receives high-frequency signals in a first frequency band, the antenna having a substantially hemispherical radiation pattern;

a second circularly polarized antenna that efficiently sends and/or receives high-frequency signals in a second frequency band higher than the first frequency band, the antenna having a substantially hemispherical radiation pattern; and

a substrate, the first circularly polarized antenna and the second circularly polarized antenna being disposed on the front and rear surfaces, respectively, of the substrate, the radiation patterns of these two antennas thereby being opposite in direction.

2. The antenna apparatus according to Claim 1, further comprising two wiring patterns, one being connected to the first circularly polarized antenna on the front surface of the substrate, the other being connected to the second circularly polarized antenna on the rear surface of the substrate.

3. The antenna apparatus according to Claim 2, further comprising at least one coaxial cable, the first circularly polarized antenna and the second circularly polarized antenna being connected via the wiring patterns and the coaxial cable, to a communication apparatus.

4. The antenna apparatus according to Claim 2, further comprising a frequency synthesizer that is connected, via the wiring patterns, to the first circularly polarized antenna and the second circularly polarized antenna, the frequency synthesizer being common to both the antennas.

5. The antenna apparatus according to Claim 4, wherein the first circularly polarized antenna and the second circularly polarized antenna are connected via the frequency synthesizer to the common coaxial cable that is connected to the communication apparatus.

6. The antenna apparatus according to Claim 4, wherein the frequency synthesizer is disposed on one surface of the substrate, the wiring pattern on the other surface is guided via a through hole of the substrate to the surface where the frequency synthesizer is disposed, and is connected to the frequency synthesizer.

7. The antenna apparatus according to Claim 6, wherein the frequency synthesizer is disposed on the surface of the substrate, the surface on which the second circularly polarized antenna is disposed.